[O2] Using e-learning to promote peer learning and assessment

Paul Chin and Alistair Anderson
Department of Chemistry
University of Hull
p.a.chin@hull.ac.uk

ABSTRACT

Increasing student numbers leads to escalating pressures on lecturers with burgeoning assessment demands on their time. Peer learning and peer assessment can help tackle these issues to maintain academic quality and provide time savings for assessment processes. In addition, the use of technology in the form of e-learning can also offer more efficient ways of delivering peer learning and assessment.

This paper discusses how an e-learning peer model was adopted at the University of Hull for about 120 first year undergraduate students. There were a number of reasons for adopting a peer learning model along with peer assessment. Academically, there were a number of potential benefits, including helping students develop a better understanding of the topic and improving self confidence. Putting students into peer groups also helped them socialise and make new contacts in the new electronic environment. From a practical sense, peer groups can mean less staff time focussed on face to face support, if organised appropriately and peer assessment can mean less staff time spent on marking.

The results showed that students over-whelmingly liked working online in groups and felt that the peer assessment scheme was fair. Problems arose with the automation of the peer assessment marks and did not deliver the time savings hoped for. This paper will discuss the findings and recommend future developments to refine this model. It is anticipated that from this, such use of technology can be used appropriately to engage students in high quality learning through peer support and assessment, whilst also bringing real benefits and incentives for staff to engage in peer learning and assessment.

INTRODUCTION

Group work has been used in classroom settings for many years and its effectiveness as an aid to learning is based on well established research. Students learn from their experiences and from interacting with each other and this is well documented by researchers such as Piaget (1950) and Vygotsky (1978). There are many teaching methods for engaging students in group work, such as buzz groups or fish bowl exercises (2005) and these are mostly directed by the tutor.

Whilst group work can cover a range of activities involving the tutor and students, peer learning is an extension of this approach where the learning becomes more directed by the students themselves, rather than in class by the tutor (2001). Peer learning relates to the learning that takes place amongst students independent of the tutor and location i.e. the classroom. Students are often able to gain a better understanding of a topic by consulting each other and working together to achieve common goals.

Associated with this is the issue of assessment. The most common form of assessment is when the tutor assesses the students against set learning objectives based

on the content taught in class. However, the tutor is not always aware of the work students undertake outside the classroom and can therefore only base assessment on limited learning outcomes. In such circumstances peer assessment can support the efforts of individual students by allowing their peers to offer constructive feedback on their work and give recognition to supplement the credit provided by the tutor.

With the advent of the World Wide Web in the mid 1990s and the subsequent evolution of structured online learning technologies in the form of virtual learning environments and intranets, the practice of learning online or e-learning, has become ubiquitous across education. E-learning is not a new form of teaching per se but simply traditional teaching approaches developed for delivery via a computer. The same principles of learning still present themselves, such as the learning cycle proposed by Kolb (1984) where learning is an iterative process and so teaching and learning still requires interactive involvement.

Early research into the benefits of peer learning and assessment has focussed on student groups that operate in a face to face setting. E-learning however, by its very nature means that students are often not able to meet face to face and so peer collaboration would not seem a viable approach to supporting the learning process. Even if students are based on the same campus it is sometimes difficult to engage in peer work due to other constraints. These may include timetable classes preventing students meeting up or personal circumstances restricting the ability of students to travel to their institution at given times to meet up with their peers if they live several miles away. So the question arises as to whether it is possible to engage students in peer learning supported through e-learning.

Learning can take place in a whole variety of educational settings, such as the lecture, tutorial, field trip, seminar or laboratory setting. E-learning simply provides an additional setting in which learning can take place. The basis of this paper therefore is for the authors to demonstrate how they have developed an e-learning peer model to foster peer learning amongst a large class of students.

BENEFITS OF ADOPTING AN ONLINE PEER LEARNING MODEL

As with face to face peer collaboration, peer learning supported by e-learning offers a number of benefits, both academically related and social. There are some differences however, such as the loss of non-verbal gesturing that takes place when students are physically in the same room and the synchronous communication. On the other hand e-learning offers potentially different benefits such as asynchronous communication or records of work which can be archived and re-visited, unlike the interactions which take place in a seminar for example.

In terms of academic benefits peer learning can promote a greater understanding of a topic since students are often able to articulate concepts and ideas in ways which the tutor cannot. This is no reflection on the tutor as a capable teacher since students who discuss a topic approach it from a common lack of understanding and can derive the answer, whereas the teacher already understands the content so may not be able to transfer this understanding as easily because they approach it from a different level of understanding.

By working together students also improve their own self confidence as they are able to take more ownership of their learning, as opposed to being supported by the tutor. Collaborating with peers also helps improve communication and IT skills. From a tutor's point of view, online peer learning has the potential to save time as the students become their own source of support.

From a social perspective, online peer learning also offers several advantages. By encouraging students to engage with each other the tutor is fostering a sense of

community and helps students socialise with each other. Creating online 'ice breakers' for example i.e. ways of getting students to interact with each other, students will mix with a wider circle of peers than normal. Peer groups also foster a better sense of team work ethics and the social issues that this brings with it, such as being able to deal with conflict.

METHODOLOGY

The approach taken by the authors for this study was to introduce an online peer learning and assessment model for students on their first year of a biological sciences course and in the first weeks of the first semester, when they are both new to the university and each other. The module was an IT skills based one supported by the Blackboard virtual learning environment. Students were put into groups of 4-5 during classes and were given a mini group project to undertake in the first few weeks of teaching. Each group had to submit one piece of work for assessment and peer assess each member's contribution to the work.

Ice breakers were introduced online to encourage members of a group – many of whom would not have met each other before as they were all new to the course, to introduce themselves (online) and to meet face to face. Whilst it was planned that most students in each group would be in the same class this was not always the case. This meant that although many groups had the potential to meet face to face immediately, some did not and so arranged meetings outside of class or communicated entirely online.

The framework for the actual project was to give each group a remit for a presentation based on a biological topic. As a group they had to divide the work amongst themselves and collaborate to undertake all the activities and produce a joint presentation file on which they would be jointly assessed. The other aspect of the assessment was the peer assessment based on their contribution to the work. The assessment model used was the one originated by Goldfinch and Raeside (1990) but refined by Li (2001). A marking template was produced which each student completed and submitted online.

RESULTS

Measurable outcomes for the peer work consisted of the actual project submissions from each group, the records of communication archived on Blackboard and student questionnaires. The students were asked to complete anonymous surveys prior to the peer work and then after the projects had been submitted – but before they had been awarded marks. There is an argument about the timing of such post-questionnaires as to whether students answer truthfully for fear of having their results influenced. However, since they were guaranteed anonymity and from the honesty of the responses, this was clearly not the case. The responses therefore, gave a very rich insight into the students' thoughts on the peer work. It is more subjective to measure any perceived outcomes from the quality of the work produced but the archives gave a good indication of overall group communication.

From the student surveys which could be counter-checked by the archive evidencing the level of group interaction online, it was clear that the major problems with the peer work was getting all members of groups to participate with each other. The archives backed this up by showing that some groups worked very well together and communicated often online, whereas other groups did not interact much online. Student survey responses clearly showed that this was the case, where the majority of comments related to a lack of communication from some group members or the fact that some members did not work effectively with the rest of the group, preferring to work independently.

Based on student responses, there were three major themes arising from the peer work which they liked: meeting new people; the ease of

communication; and the ability to share ideas and discussions with other group members. Of the things that students disliked the main issues were: a lack of communication from some group members; some people not working as part of a group and; the awkwardness of working online with fellow group members when they hadn't actually met face to face.

In terms of the peer assessment there was very little adverse comment about the procedure. When asked directly whether they understood the marking scheme and whether they thought it was fair, over 92% and 80% respectively, thought it was easy to understand and was fair. One interesting issue that didn't feature prominently was the distinct lack of comment about the actual use of technology. Very few students made comments about Blackboard hindering the actual group work.

For the pre-survey, students were asked about their prior experience and involvement with face to face group work and online group work. The students were then asked about their thoughts on peer work in light of the peer project work. Over 93% of students had worked in face to face groups prior to the IT course. Of these, only 40% had engaged in online group work. The responses showed that student feeling about peer work was positive prior to the Blackboard project and this remained so afterwards, clearly showing that students had not been put off by working online in groups.

DISCUSSION

Based on the results of the work it is quite clear that the vast majority of students felt that the peer groups worked well and there were many comments from students actually saying that they enjoyed the online group work. There were only one or two comments from students suggesting that the use of technology to support peer work inhibited group interactions. Indeed, most of the comments about disliking the peer work focussed almost entirely on the human aspects of peer work. These were issues such as getting all group members to participate actively in the work; to communicate effectively with each other; and to contribute to the workload fairly – issues that also affect groups even when working face to face.

From this initial study therefore, it seems apparent that the use of technology does not adversely affect the potential for students to work in peer groups. Any problems clearly related to well established issues of encouraging students to work in groups at all. These problems surface in face to face groups and are an ongoing problem of trying to foster better group collaboration. On the positive side, the use of Blackboard clearly had a number of benefits such as the asynchronous communication, the ability to meet new people online and being able to share ideas and get peer feedback.

One of the aims of this study was to produce real time savings in administrative and support duties. In terms of student support this was successful as the students became an extra avenue of support for each other, reducing the amount of time the authors had to spend dealing with student enquiries. However, the administration of the peer assessment process proved to be unwieldy as it took much longer than expected. An attempt was made to automate the peer marking, rather than ask students to submit paper sheets with their marks on. Instead the students submitted their marks electronically in Word, using a standard template. This took much longer to collate the marks than if each student simply submitted a paper form.

SUGGESTIONS FOR FURTHER DEVELOPMENT

The outcomes of this study raised a number of issues which warrant further investigation. The thorny issue of encouraging all group members to participate in the peer work and to take responsibility for their part of the assessment needs further investigation. There are a number

of approaches which may be considered from existing face to face models, such as a rewards or penalty system; or perhaps induction for students on how to work effectively in groups. Whichever approach may be adopted in future it will be essential to instigate this early on so that all students are clear about the purposes of the peer work, their obligations and the positive benefits of engaging with their peers.

Another outcome of the work was the cumbersome process of collating the peer assessment marks. Since the aim of this work is to promote the use of technology to support peer work and assessment the authors will explore the possibility of developing an electronic tool to automate the process. This possibility is already being actively explored and the authors hope to have a tool developed in the not too distant future.

It is the intention of the authors to promote technology supported peer learning and assessment as a way of enhancing learning which is as effective as face to face approaches. Even with face to face teaching and learning it is difficult to measure how student learning is being enhanced. Even summative assessment through say, written examinations has to be designed carefully to assess whether student learning has been successful. One way to measure this is to allow the student to demonstrate they have understood what is being taught by drawing out their understanding of a problem and analyse and internalise the information.

With the student mini projects, each group is given a biological topic to discuss, a topic which raises conflicting evidence. Students have to discuss the topic and deliver this evidence as part of their presentation and draw a conclusion based on their understanding of the problem. For the problem set, there are generally four possible outcomes: that the argument providing evidence of the biological topic is proven; that it is not; a combination of the both where students address all the evidence but do not draw any conclusions; or that the students simply fail to understand the problem at all and simply report one side of the argument without considering all the evidence available.

Whilst being slightly subjective it may be possible to evaluate whether the peer work has enhanced the learning process by reviewing the degree to which different groups produce a presentation drawing on all the evidence and presenting a well-reasoned argument. The author originally ran this work as an individual exercise so further work would be interesting to review the presentations and reflect on whether there is any evidence to suggest that working in peer groups increases students' understanding of the topic by offering more reasoned presentations.

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